

WHAT IS CLAIMED IS:

1. A method for repairing a turbine blade for a gas turbine engine, said method comprising:

securing the blade into a clamping fixture;

obtaining a zero reference from a gauging surface on the clamping fixture;

coupling the clamping fixture to a grinding machine; and

grinding the blade based on the zero reference.

2. A method in accordance with Claim 1 wherein securing the blade into the clamping fixture comprises securing the blade dovetail such that at least a first datum on the dovetail is located by the fixture.

3. A method in accordance with Claim 1 wherein securing the blade into the clamping fixture further comprises securing the blade such that the blade dovetail engages a locating stop.

4. A method in accordance with Claim 1 wherein securing the blade into the clamping fixture further comprises positioning the blade dovetail against a pair of locator pins that each engage serrations formed on the dovetail.

5. A method in accordance with Claim 1 wherein securing the blade into the clamping fixture further comprises pneumatically clamping the blade dovetail with the fixture.

6. An apparatus for aligning a gas turbine engine blade including a dovetail, said apparatus comprising:

at least one locator pin configured to engage a serration formed on the blade dovetail;

a locator block supporting said locator pin, said locator block comprising at least one groove sized to receive said locator pin therein; and

a slide block assembly for engaging a dovetail surface opposite the serration, said slide block assembly configured to position the blade dovetail against said locator pin.

7. An apparatus in accordance with Claim 6 further comprising a base member comprising a platform comprising an end plate and an upper surface for supporting said slide block assembly and said locator block, said end plate extending from said platform upper surface.

8. An apparatus in accordance with Claim 7 wherein said platform further comprises a slot defined therein for providing access to the turbine blade.

9. An apparatus in accordance with Claim 7 wherein said slide block assembly is movable between a first position wherein the blade dovetail is removable from the slide block assembly, and a second position, wherein the blade dovetail is secured to the slide block assembly.

10. An apparatus in accordance with Claim 7 wherein said at least one locator pin further comprises a pair of opposed pins configured to retain the blade dovetail therebetween.

11. An apparatus in accordance with Claim 7 wherein said slide block assembly comprises a push block for engaging the dovetail surface opposite the serration, said push block configured to limit an amount of travel of said slide block.

12. An apparatus in accordance with Claim 7 further comprising a drive mechanism coupled to said end plate and said slide block for positioning said slide block.

13. An apparatus in accordance with Claim 12 wherein said drive mechanism comprises a pneumatic cylinder.

14. An apparatus in accordance with Claim 6 further comprising a gauge plate coupled to said locator block for positioning the turbine blade relative to said apparatus, said gauge plate comprising a gauge set block for providing a zero reference point.

15. An apparatus in accordance with Claim 6 wherein said locator pin comprises a first end, second end, and a clamping section extending therebetween, said clamping section having a length that is substantially equal to a length of the blade dovetail.

16. An apparatus in accordance with Claim 6 further comprising a locator plate comprising a stop for positioning the blade dovetail in said apparatus.

17. A tool for securing a turbine blade including a dovetail, said tool comprising:

a pair of locator pins configured to engage adjacent serrations defined in the turbine blade, each said locator pin comprising a first end, a second end, and a clamping section extending therebetween, said clamping section having a length that is substantially equal to a length of the blade dovetail;

a locator block supporting said locator pins, said locator block comprising a plurality of grooves to receive each said locator pin therein; and

a slide block assembly configured to engage the blade dovetail opposite said locator pins such that the blade dovetail is secured in said tool by said locator pins.

18. A tool in accordance with Claim 17 further comprising a gauge plate coupled to said locator block for locating the turbine blade relative to said apparatus, said gauge plate comprising a gauge set block for providing a zero reference point.

19. A tool in accordance with Claim 17 further comprising a base member comprising a platform comprising an upper surface for supporting said slide

block assembly and said locator block, and an end plate, said end plate extending from said platform upper surface.

20. A tool in accordance with Claim 19 wherein said slide block assembly is movable between a first position wherein the blade dovetail is removable from the tool, and a second position wherein the blade dovetail is secured within the tool and between said locator pins and said slide block assembly.